AlliedSignal Inc.

Morristown, NJ

Wetlands Characterization Report

UOP Site
East Rutherford, New Jersey

ENSR Consulting and Engineering

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1.0 INTRODUCTION

ENSR Consulting and Engineering conducted comprehensive wetlands delineation and characterization activities at the UOP Superfund Site in East Rutherford, New Jersey in December 1993 and January 1994. The wetland delineation was conducted to determine the location and areal extent of jurisdictional wetlands within and adjacent to the remediation area, and to develop baseline wetlands conditions within the remediation area to support further remediation activities.

The scope of the wetlands investigations involved an offsite wetlands determination and an onsite wetlands delineation. The offsite wetlands determination was conducted to determine the general location, extent and type of wetlands occurring in the vicinity of the UOP property. This determination included obtaining and reviewing available federal and state natural resource and wetlands mapping, existing previous reports and studies for the purpose of identifying the general location of wetlands as well as initial characterization. The onsite wetlands delineation was conducted to confirm the location and areal extent of wetlands. The onsite delineation also afforded the opportunity to characterize wetland types based on actual onsite observation. Data collected on both the areal extent and types of wetlands present will serve as an accurate baseline prior to implementation of remedial design. This report is organized into sections describing the methods of investigations, the findings, and a brief statement on conclusions.

A section of the UOP remediation area (property which lies on the southeast side of the Conrail RR tracks, see Figure 1) falls within the jurisdiction of the Hackensack Meadowlands Development Commission (HMDC), and thus is beyond jurisdiction of the New Jersey Freshwater Wetlands Protection Act Rules (NAJC 7: 7A). The remainder of the remediation area (northwest of the Conrail RR tracks) is within NJDEPE wetlands jurisdiction.

2.0 METHODOLOGY

2.1 Methodology of Offsite Wetlands Investigation

An offsite investigation was conducted to determine the general location, extent, and type of wetlands occurring within the UOP property and within the limits of the remediation area. The offsite wetlands determination for the site was conducted in accordance with the *Preliminary Data Gathering and Synthesis* Section of the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Offsite Determination Method* subsection of the *1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (FICWD, 1989). The offsite sources consulted and reviewed for this report included the U.S. Geological Survey (USGS) *Topographic Map* (Weehawken Quadrangle, 1981), the U.S. Department of Agriculture/Soil Conservation Service (USDA/SCS) *Interim Soil Survey of Bergen County* (1981), the U.S. Fish and Wildlife Service (USFWS) *National Wetlands Inventory Map* (Weehawken Quadrangle, 1976), the New Jersey Department of Environmental Protection and Energy (NJDEPE) *Freshwater Wetlands Map* (Weehawken Northwest map, 1988), the U.S. Environmental Protection Agency (U.S. EPA) *Wetland Assessment Area Boundary Map* (Rutherford and Walden Swamp maps, 1989). The U.S. EPA Region II *Functional Assessment of Wetlands in New Jersey's Hackensack Meadowlands* (1989) was also consulted.

2.2 Methodology of Onsite Wetlands Investigation

The onsite wetlands delineation conducted on areas within HMDC jurisdiction was performed in accordance with the routine onsite three parameter approach (hydrophytes, hydric soils, and hydrology) of the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). In addition, wetlands delineation for these areas conformed to the procedures and performance standards established in the *Clarification and Interpretation of the 1987 Manual* Technical Memorandum (U.S. Army Corps of Engineers, 1992),

The onsite wetlands delineation conducted in areas beyond HMDC jurisdiction was performed in accordance with the *Intermediate-level Onsite Determination Method* of the *1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (FICWD, 1989). In addition, wetlands in both areas were classified in accordance with the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979).

The entire site was walked with an emphasis placed on areas that had been preliminarily identified as having wetlands. The wetland/upland boundary was visually inspected and

evaluated using the quadrat assessment technique outlined in both the Army Corps and Federal Manuals (Environmental Laboratory, 1987 & FICWD, 1989). Vegetation, soils, and hydrological information was recorded at each transect location and plotted on the ENSR 3-Parameter Wetland Delineation Summary Sheet.

Vegetational assessment included assessing all defined strata (tree, liana, sapling, shrub, and seedlings and herbs) using the *Ocular Estimation of Cover Technique* (Hayes et al, 1981). Dominant species were identified from each stratum and individually recorded. Strata are defined as individual vegetative cover types within the community (i.e., herbs, shrubs, saplings, and trees). Dominant species were determined to be any species displaying greater than 50% of the total dominance measure for the stratum, plus any species that comprise 20% or more of the dominance measure for the stratum (FICWD, 1989). In rare instances where dominant species individually comprised less than 20% of total areal coverage, these species were recorded and factored into the cumulative total. Each dominant species National Wetland Indicator Status (Reed, 1988) was assigned, and hydrophytic vegetation was considered prevalent when the individual species NWI Status were cumulatively totaled, and the sum of all the dominant species was greater than 50% obligate wetland (OBL), facultative wetland (FACW) or facultative (FAC), which satisfies the standard hydrophytic vegetation criterion established in the 1989 Federal Manual and the 1987 Army Corps Manual.

Soils were examined to a depth of 20 to 24 inches. The Hue, Value and Chroma of the soil profile were recorded using the Munsell Soil Color Chart (Kollmorgan Corporation, 1975). Soil series were determined using the USDA/SCS Soil Survey of Bergen County, and hydric soil field indicators (presence of organic soils, histic epipedon, peraquic moisture regime) were recorded.

Wetlands hydrological field indicators were also recorded at each transect location. The presence or absence of root zone saturation and/or inundation was noted, as was depth to groundwater, buttressed trees, water stained leaves or observable plant adaptations to wetlands conditions.

3.0 FINDINGS

3.1 Findings of Offsite Investigation

This section presents the results of a review of resource maps and photographs available for the remediation area.

For purposes of clarity, the site is divided into two sections, east and west. The two sections are separated by a Conrail RR track which runs from the northeast to the southwest through the site.

3.1.1 USGS Topographic Map

The USGS topographic quadrangle indicates marsh or swamp occurring on the UOP site in the eastern half of the remediation area (Figure 1). The marsh or swamp area continues offsite to the east, southeast and south towards Berry's Creek. Marsh or swamp is also indicated offsite to the south, west of the railroad tracks. The USGS topographic quadrangle indicates two winding surface water channels and two lagoons occurring immediately to the south of the central section of the remediation area, and adjacent to the Conrail RR tracks. The two channels are connected to a straight channel section which drains to Berry's Creek, a tributary to the Hackensack River. The system of winding and straight channels leading to Berry's Creek is known as Ackerman's Creek.

3.1.2 USDA/SCS Soil Survey of Bergen County

The USDA SCS soil Survey indicates that the entire remediation area is mapped as Urban Land (Ur) (Figure 2). Urban Land is not listed as a hydric soil on the *Hydric Soils of the United States* (NTCHS, 1991). Urban Land is an anthropogenically altered soil and typically consists of paved areas, fill, parking lots, and buildings. Drainage class and permeability have not been established for the Urban Land map unit. Ackerman's Creek is indicated on the USDA/SCS and its location corresponds with that of the USGS.

3.1.3 National Wetlands Inventory Map

The National Wetlands Inventory Map identifies an area of Estuarine Intertidal Emergent (E2EM) wetland in the eastern section of the remediation area (Figure 3). E2EM wetland is also indicated offsite to the south of the Remediation Area. The location of the E2EM wetlands corresponds

with the location of the swamp or marsh indicated by the USGS map. Berry's Creek is indicated 1/4 mile offsite to the east.

3.1.4 NJDEPE Freshwater Wetlands Map

The NJDEPE map characterizes wetland area types by numerical categories. The NJ DEPE map (Figure 4) indicates Estuarine Intertidal Emergent Persistent Irregular (187) wetlands in the southern, southeastern, and eastern sections of the remediation area. These wetlands correspond with wetlands identified by the USGS and NWI maps. The NJDEPE map also indicates Palustrine Emergent Persistent Saturated (19) wetlands in the north central section of the remediation area. This area is not indicated as wetland by any of the other references. The easternmost section of the UOP site is classified as Upland (01). An additional drainage ditch is depicted along the southwest border of the eastern section of the site, bisecting the type 187 wetland. These surface water types are identified as Palustrine Open Water Permanent (type 07) and Riverine Lower Perennial Open Water Excavated (type 124).

3.1.5 Wetland Assessment Area Boundary Map

The eastern section of the UOP site lies within the jurisdiction of the Hackensack Meadowlands Development Commission (HMDC). The EPA Wetland Assessment Area (AA) Boundary Map only identifies the wetlands occurring within HMDC jurisdiction. The Wetland Assessment Area Boundary Map identifies a section of Assessment Area #24 within the boundaries of the remediation area (Figure 5). The Assessment Area section that is included is in the southeastern section of the site. Assessment areas are wetlands identified from aerial photography interpretation with limited onsite groundtruthing (Maguire Group, 1989). The area identified in the vicinity of the remediation area corresponds with the USGS, NWI, and part of the NJDEPE maps. The AA map indicates two winding channels, a lagoon, and two connected drainage ditches occurring immediately to the south of the site.

3.2 Findings of Onsite Wetlands Delineation

The onsite wetland delineation was conducted by ENSR on December 21, 1993. The onsite wetlands delineation confirmed the location of estuarine intertidal wetlands previously indicated by offsite sources within remediation area boundaries and wetlands located on adjacent parcels. In addition, the onsite delineation provided the opportunity to comprehensively quantify exact locations as well as the areal extent of all wetlands in the vicinity. A complete site inspection was conducted during the time of the delineation to ensure that all wetland areas within the study area were identified. In general, wetlands were located in the south, southeast and eastern sections of the remediation area. A wetland boundary was also identified just south (offsite) of

the western site area. This section describes the wetlands identified during the onsite delineation.

Wetland flag series A1-A5 (indicated on Site Plan in Appendix C), located south of the remediation area, defines the boundary of an estuarine intertidal emergent wetland which extends further to the southeast. This wetland is characterized by red maple (*Acer rubrum*), grey birch (*Betula populifolia*), and common reed (*Phragmites australis*). The surface water channel and rail spur were located adjacent to the remediation area, as indicated by the USGS map.

Wetland flag series B1-B40 (indicated on Site Plan in Appendix C), located in the east site area, defines the boundary of an estuarine intertidal emergent wetland which extends offsite to the east, south and southeast. This wetland is characterized almost entirely by the common reed (*Phragmites australis*).

Areas immediately west of the railroad tracks at the location of the former UOP site buildings and parking areas were observed to be in flooded conditions as the result of blocked culverts. *Phragmites australis* had colonized some of these flooded areas. These areas were determined not to be "Waters of the United States" as all areas were underlaid with either concrete foundations or asphalted roadways and parking lots. } AREA 2

ENSR's three-parameter wetlands delineation transect summary sheets are provided in Appendix A. These transect summary sheets provide the detailed technical evidence of the vegetation, soils and hydrology of all delineated wetlands. Photographs of the transect locations are provided in Appendix B. The Site Plan depicting the wetlands delineation is provided in Appendix C.

4.0 CONCLUSIONS

This Wetlands Characterization Report has presented a summary of existing wetlands resources found at the UOP superfund site and on adjacent parcels. Identification, location and classification of these wetlands has been presented based on a two-tiered (offsite and onsite) approach. The offsite analysis was conducted based on the assemblance and interpretation of existing natural resource mapping and documents. The onsite wetlands delineation corroborated the location of wetlands indicated by previous reports, and provided additional knowledge regarding the precise areal extent and character of the estuarine wetlands at the UOP site. This baseline information will assist in the evaluation of potential impacts to wetlands encountered during the remedial design.

5.0 REFERENCES

Cowardin, L.M., V. Carter and F. Golet, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-29/31. 103pp.

Environmental Laboratory, 1987. *Corps of Engineers Wetlands Delineation Manual*. Department of the Army, U.S. Army Corps of Engineers, Washington, DC. 169 pp.

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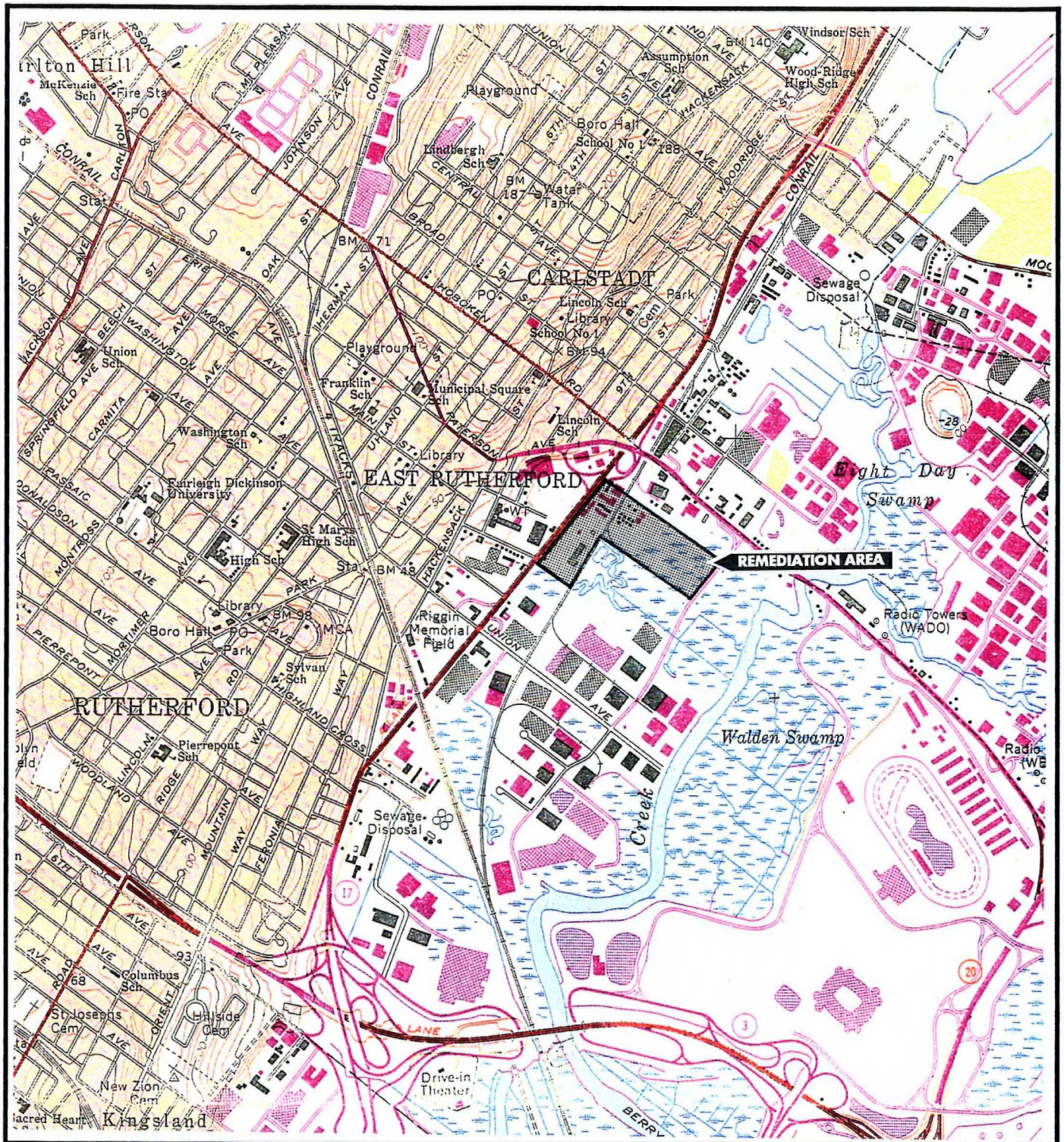

SOURCE: USGS 7½ Minute Topographic Quadrangle, Weehawken, NJ

SCALE

0 1/4 1/2 1 MILE

N

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FIGURE 1

USGS TOPOGRAPHIC QUADRANGLE AT UOP SUPERFUND SITE EAST RUTHERFORD, NEW JERSEY

DRAWN: AJK	DATE: January 4, 1994	PROJECT NO.: 0186-002	REV:
FILE NO.:	CHECKED: CET		

SOURCE: USDA Soil Conservation Service, 1989

Scale 1:20,000

N

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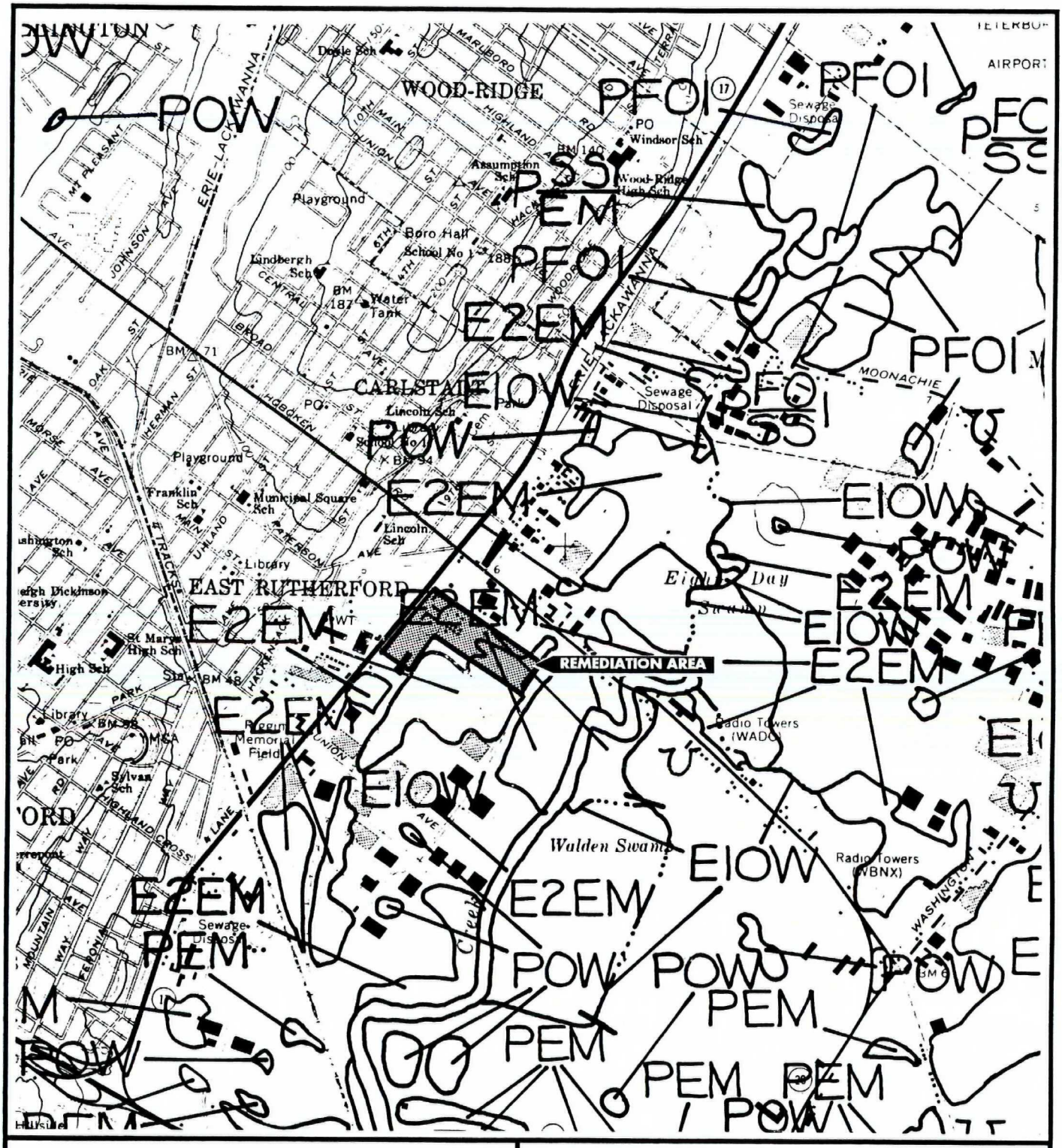
FIGURE 2

USDA/SCS BERGEN COUNTY SOIL SURVEY OF UOP SUPERFUND SITE EAST RUTHERFORD, NEW JERSEY

DRAWN: AJK	DATE: January 13, 1994	PROJECT NO.: 0186-002	REV:
FILE NO.:	CHECKED: CET		



SOURCE: US FWS National Wetlands Inventory, Weehawken USGS Quadrangle

SCALE

0 1/4 1/2 1 MILE

N

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FIGURE 3

U.S. FWS NATIONAL WETLANDS INVENTORY AT UOP SUPERFUND SITE EAST RUTHERFORD, NEW JERSEY

DRAWN: AJK	DATE: January 4, 1994	PROJECT NO.: 0186-002	REV:
FILE NO.:	CHECKED: CET		

SOURCE: New Jersey DEPE, Weehawken N.W., 1986

Scale 1:12000

Key:

01	Upland
07	Palustrine Open Water Permanent
19	Palustrine Emergent Persistent Saturated
124	Riverine Lower Perennial Open Water Excavated
187	Estuarine Intertidal Emergent Persistent Irregular

N

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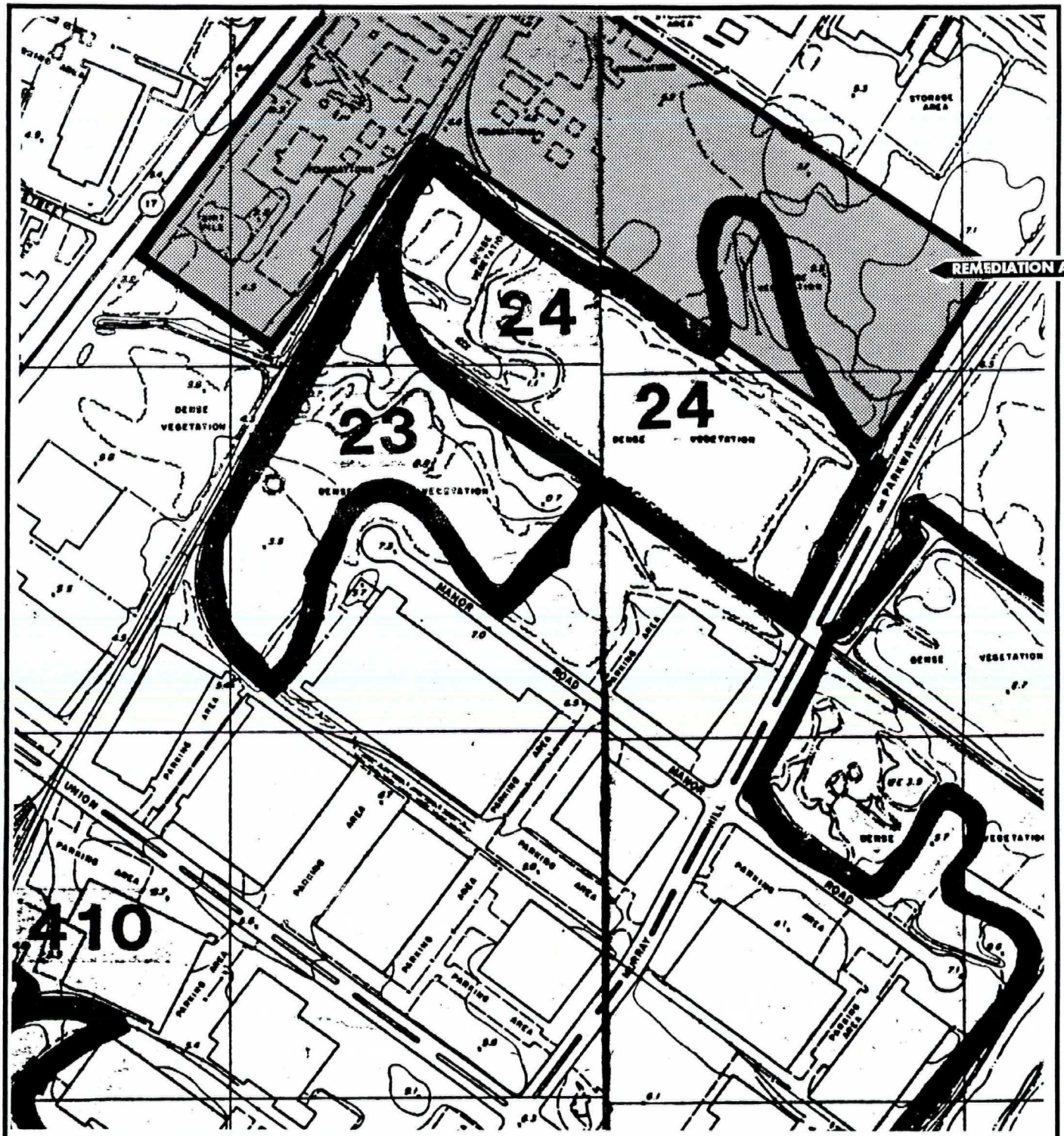
FIGURE 4

NJ DEPE FRESHWATER WETLANDS MAP OF UOP SUPERFUND SITE EAST RUTHERFORD, NEW JERSEY

DRAWN: AJK	DATE: January 13, 1994	PROJECT NO.: 0186-002	REV:
FILE NO.:	CHECKED: CET		



SOURCE: US EPA, Region II, 1989

Scale 1:4,800

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ENSR

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FIGURE 5

WETLAND ASSESSMENT AREA BOUNDARY MAP OF UOP SUPERFUND SITE EAST RUTHERFORD, NEW JERSEY

DRAWN: AJK	DATE: January 4, 1994	PROJECT NO.: 0186-002	REV:
FILE NO.:	CHECKED: CET		

APPENDIX A

WETLAND DELINEATION SUMMARY SHEETS

WETLAND DELINEATION SUMMARY SHEET
FOR USE WITH 1989 FEDERAL MANUAL

Project Title: UOP Superfund Site				Project Location: East Rutherford, NJ		
Sample Location: Wetland at A2				Date: December 21, 1993		
VEGETATION						
DOMINANTS BY STRATUM				Dominance Ratio	Percent Dominance	NWI Status
Trees:						
Acer rubrum				5/10	50	FAC
Betula populifolia				5/10	50	FAC
Lianas:						
Saplings:						
Shrubs:						
Seedlings and Herbs:						
Phragmites australis				54/90	60	FACW
Ambrosia artemisiifolia				36/90	40	FACU
Mosses and Liverworts:						
Tally:	OBL	FACW 1	FAC 2	FACU 1	UPL	SUM 4
{OBL+FACW+FAC} / SUM		X 100 =	Area Disturbed?		Yes	X No
3/4=75%			Decscribe:			

(continued on reverse side)

SOIL

Depth	Munsell Color (Wet) Matrix/Mottle	USDA Texture (Wet)	Remarks
0 inch			
3 inch	10 YR 2/1	Sandy loam	
18 inch	10 YR 4/2	Sandy loam	Stream Edge 10" deep.
___ inch			

Soil Pedigree: Not listed — Permeability: Not listed

Series and Phase: Urban Land — Drainage Class: Not listed

___ NTCHS List	___ Organic Soil	___ High Organic Content in Surface Horizon
___ Histic Epipedon	___ Sulfidic Material	___ Aquic Moisture Regime
X Peraquic Moisture Regime	___ Reducing Condition	___ Iron Concretions
___ Manganese Concretions	___ Gleyed	___ Wet Spodosols
___ Dark Vertical Streaking of Subsurface Horizons		___ OBL Plants
___ OBL and FACW Plants and Wetland/Upland Boundary Abrupt		

HYDROLOGY

___ Recorded Data Indicating Inundation or Saturation for Extended Period During the Growing Season

Source: — Dated:

X Inundation (Depth 10")	___ Saturation (Depth___)	
___ Water Marks	___ Oxidized Rhizosphere	___ Drift Lines
___ Sediment Deposits	X Water Stained Leaves	X Drainage Patterns
___ Surface Scoured Areas	___ Pneumatophores	___ Buttressed Trees
X Stooling	___ Adventitious Roots	___ Shallow Root Systems
___ Floating Stems	___ Polymorphic Leaves	___ Hypertrophied Lenticels
___ Inflated Leaves, Stems, Roots	___ Aerenchyma	X Hydric Soils

CONCLUSIONS

Yes	Hydrophytes Prevalent	Yes	Hydric Soils
Yes	Wetland Hydrology	Yes	Wetland?

Wetlands Scientist(s):

Wetlands Scientist(s): D. Jean Kilpatrick

Wetlands Technical Specialist: Carl E. Lamm, CWD

WETLAND DELINEATION SUMMARY SHEET
FOR USE WITH 1989 FEDERAL MANUAL

Project Title: UOP Superfund Site				Project Location: East Rutherford, NJ		
Sample Location: Upland at Flag A2				Date: December 21, 1993		
VEGETATION						
DOMINANTS BY STRATUM				Dominance Ratio	Percent Dominance	NWI Status
Trees:						
Populus deltoides				5/5	100	FAC
Lianas:						
Saplings:						
Populus deltoides				7/10	70	FAC
Betula populifolia				3/10	30	FAC
Shrubs:						
Seedlings and Herbs:						
Phragmites australis				59.5/85	70	FACW
Ambrosia artemisiifolia				4.25/85	5	FACU
Grasses				21.25/85	25	
Mosses and Liverworts:						
Tally:	OBL	FACW 1	FAC 3	FACU 1	UPL	SUM 5
{OBL+FACW+FAC} / SUM		X 100 =	Area Disturbed?		Yes	X No
4/5=80%			Describe:			

(continued on reverse side)

SOIL

Depth	Munsell Color (Wet) Matrix/Mottle	USDA Texture (Wet)	Remarks
0 inch			
3 inch	10 YR 3/2	Sandy loam	
18 inch	7.5 YR 4/4	Sandy loam	No groundwater to 18"
___ inch			

Soil Pedigree: Not listed — Permeability: Not listed

Series and Phase: Urban Land — Drainage Class: Not listed

___ NTCHS List	___ Organic Soil	___ High Organic Content in Surface Horizon
___ Histic Epipedon	___ Sulfidic Material	___ Aquic Moisture Regime
___ Peraquic Moisture Regime	___ Reducing Condition	___ Iron Concretions
___ Manganese Concretions	___ Gleyed	___ Wet Spodosols
___ Dark Vertical Streaking of Subsurface Horizons		___ OBL Plants
___ OBL and FACW Plants and Wetland/Upland Boundary Abrupt		

HYDROLOGY

___ Recorded Data Indicating Inundation or Saturation for Extended Period During the Growing Season

Source: Dated:

___ Inundation (Depth___)	___ Saturation (Depth___)	
___ Water Marks	___ Oxidized Rhizosphere	___ Drift Lines
___ Sediment Deposits	___ Water Stained Leaves	___ Drainage Patterns
___ Surface Scoured Areas	___ Pneumatophores	___ Buttressed Trees
___ Stooling	___ Adventitious Roots	___ Shallow Root Systems
___ Floating Stems	___ Polymorphic Leaves	___ Hypertrophied Lenticels
___ Inflated Leaves, Stems, Roots	___ Aerenchyma	___ Hydric Soils

CONCLUSIONS

Yes	Hydrophytes Prevalent	No	Hydric Soils
No	Wetland Hydrology	No	Wetland?

Wetlands Scientist(s):

Wetlands Scientist(s):

Wetlands Technical Specialist: Carl E. Tonn, CWD

WETLAND DELINEATION SUMMARY SHEET
FOR USE WITH 1987 ARMY CORPS MANUAL

Project Title: UOP Superfund Site					Project Location: East Rutherford, NJ		
Sample Location: Wetland at Flag B7					Date: December 21, 1993		
VEGETATION							
DOMINANTS BY STRATUM					Dominance Ratio	Percent Dominance	NWI Status
Trees:		Total dbh	Total Basal Area				
Lianas:							
Saplings:							
Shrubs:							
Seedlings and Herbs:							
Phragmites australis					100/100	100	FACW
Mosses and Liverworts:							
Tally:	OBL	FACW 1	FAC	FAC-	FACU	UPL	SUM 1
{OBL+FACW+FAC} / SUM		X 100 =	Area Disturbed?			X Yes	No
1/1=100%			Describe: Fill in profile.				

(continued on reverse side)

SOIL

Depth	Munsell Color (Wet) Matrix/Mottle	USDA Texture (Wet)	Remarks
0 inch			
3 inch	10YR 2/1	Fill	
21 inch	Fill/Debris	Fill	Groundwater at 18".
____ inch			

Soil Pedigree: Not listed — Permeability: Not listed

Series and Phase: Urban Land — Drainage Class: Not listed

____ NTCHS List	____ Organic Soil	____ High Organic Content in Surface Horizon
____ Histic Epipedon	____ Sulfidic Material	____ Aquic Moisture Regime
____ Peraquic Moisture Regime	____ Reducing Condition	____ Iron Concretions
____ Manganese Concretions	____ Gleyed	____ Wet Spodosols
____ Dark Vertical Streaking of Subsurface Horizons		____ OBL Plants
____ OBL and FACW Plants and Wetland/Upland Boundary Abrupt		

HYDROLOGY

____ Recorded Data Indicating Inundation or Saturation for Extended Period During the Growing Season

Source: — Dated:

PRIMARY INDICATORS:	SECONDARY INDICATORS: (2 or more required)
____ Inundation (Depth___)	
X Saturation in Upper 12 Inches (Depth 18")	____ Oxidized Root Channels in Upper 12 Inches
____ Watermarks	X Water-stained Leaves
____ Driftlines	____ Local Soil Survey
____ Sediment Deposits	____ FAC Neutral Test
X Drainage Patterns	X Other (Buttressed Trees, Stooling)

CONCLUSIONS

Yes	Hydrophytes Prevalent	Yes	Hydric Soils
Yes	Wetland Hydrology	Yes	Wetland?

Wetlands Scientist(s): A. Thomas Hynes

Wetlands Scientist(s):

Wetlands Technical Specialist: Carl E. Hamm, CWS

WETLAND DELINEATION SUMMARY SHEET
FOR USE WITH 1987 ARMY CORPS MANUAL

Project Title: UOP Superfund Site					Project Location: East Rutherford, NJ		
Sample Location: Upland at Flag B7					Date: December 21, 1993		
VEGETATION							
DOMINANTS BY STRATUM					Dominance Ratio	Percent Dominance	NWI Status
Trees:	Total dbh	Total Basal Area					
Robinia pseudoacacia					8/40	20	FACU
Populus deltoides					16/40	40	FAC
Populus tremuloides					4/40	10	FACU
Lianas:							
Saplings:							
Populus deltoides					3/15	20	FAC
Ailanthus altissima					5.6/15	40	FACU
Shrubs:							
Seedlings and Herbs:							
Aster vimineus					5/50	10	FAC
Ambrosia artemisiifolia					35/50	70	FACU
Mosses and Liverworts:							
Tally:	OBL	FACW	FAC 3	FAC-	FACU 4	UPL	SUM 7
{OBL+FACW+FAC} / SUM	X 100 =		Area Disturbed?			X Yes	No
3/7=43%			Describe: Fill in profile.				

(continued on reverse side)

SOIL

Depth	Munsell Color (Wet) Matrix/Mottle	USDA Texture (Wet)	Remarks
0 inch			
2 inch	10YR 2/2	Sandy loam	
18 inch	Fill/Debris	Fill	No groundwater to 18".
____ inch			

Soil Pedigree: Not listed — Permeability: Not listed

Series and Phase: Not listed — Drainage Class: Not listed

____ NTCHS List	____ Organic Soil	____ High Organic Content in Surface Horizon
____ Histic Epipedon	____ Sulfidic Material	____ Aquic Moisture Regime
____ Peraquic Moisture Regime	____ Reducing Condition	____ Iron Concretions
____ Manganese Concretions	____ Gleyed	____ Wet Spodosols
____ Dark Vertical Streaking of Subsurface Horizons		____ OBL Plants
____ OBL and FACW Plants and Wetland/Upland Boundary Abrupt		

HYDROLOGY

____ Recorded Data Indicating Inundation or Saturation for Extended Period During the Growing Season

Source: — Dated:

PRIMARY INDICATORS:	SECONDARY INDICATORS: (2 or more required)
____ Inundation (Depth___)	
____ Saturation in Upper 12 Inches (Depth___)	____ Oxidized Root Channels in Upper 12 Inches
____ Watermarks	____ Water-stained Leaves
____ Driftlines	____ Local Soil Survey
____ Sediment Deposits	____ FAC Neutral Test
____ Drainage Patterns	____ Other (Buttressed Trees; Stooling)

CONCLUSIONS

No	Hydrophytes Prevalent	No	Hydric Soils
No	Wetland Hydrology	No	Wetland?

Wetlands Scientist(s):

Wetlands Scientist(s):

Wetlands Technical Specialist: Carl E. Tamm CWD

WETLAND DELINEATION SUMMARY SHEET
FOR USE WITH 1987 ARMY CORPS MANUAL

Project Title: UOP Superfund Site					Project Location: East Rutherford, NJ		
Sample Location: Wetland at Flag B33					Date: December 21, 1993		
VEGETATION							
DOMINANTS BY STRATUM					Dominance Ratio	Percent Dominance	NWI Status
Trees:	Total dbh	Total Basal Area					
Lianas:							
Saplings:							
Shrubs:							
Seedlings and Herbs:							
Phragmites australis					100/100	100.	FACW
Mosses and Liverworts:							
Tally:	OBL	FACW 1	FAC	FAC-	FACU	UPL	SUM 1
{OBL+FACW+FAC} / SUM	X 100 =		Area Disturbed?			X Yes	No
1/1=100%			Describe: Fill in profile.				

(continued on reverse side)

SOIL

Depth	Munsell Color (Wet) Matrix/Mottle	USDA Texture (Wet)	Remarks
0 inch			
3 inch	7.5 YR 3/7	Sandy loam	Groundwater at 1".
10 inch	10 YR 3/2 10 YR 4/6 Mottle	Sandy loam	
inch			

Soil Pedigree: Not listed — Permeability: Not listed

Series and Phase: Urban Land — Drainage Class: Not listed

___ NTCHS List	___ Organic Soil	___ High Organic Content in Surface Horizon
___ Histic Epipedon	___ Sulfidic Material	___ Aquic Moisture Regime
X Peraquic Moisture Regime	___ Reducing Condition	___ Iron Concretions
___ Manganese Concretions	___ Gleyed	___ Wet Spodosols
___ Dark Vertical Streaking of Subsurface Horizons		___ OBL Plants
___ OBL and FACW Plants and Wetland/Upland Boundary Abrupt		

HYDROLOGY

___ Recorded Data Indicating Inundation or Saturation for Extended Period During the Growing Season

Source: — Dated:

PRIMARY INDICATORS:	SECONDARY INDICATORS: (2 or more required)
___ Inundation (Depth___)	
X Saturation in Upper 12 Inches (Depth 1")	___ Oxidized Root Channels in Upper 12 Inches
___ Watermarks	X Water-stained Leaves
___ Driftlines	___ Local Soil Survey
___ Sediment Deposits	___ FAC Neutral Test
X Drainage Patterns	X Other (Buttressed Trees, Stooling)

CONCLUSIONS

Yes	Hydrophytes Prevalent	Yes	Hydric Soils
Yes	Wetland Hydrology	Yes	Wetland?

Wetlands Scientist(s):

Wetlands Scientist(s):

Wetlands Technical Specialist: Carl E. Lamm, CWD

WETLAND DELINEATION SUMMARY SHEET
FOR USE WITH 1987 ARMY CORPS MANUAL

Project Title: UOP Superfund Site					Project Location: East Rutherford, NJ		
Sample Location: Upland at Flag B33					Date: December 21, 1993		
VEGETATION							
DOMINANTS BY STRATUM					Dominance Ratio	Percent Dominance	NWI Status
Trees:		Total dbh		Total Basal Area			
Lianas:							
Saplings:							
Shrubs:							
Seedlings and Herbs:							
Ambrosia artemisiifolia					20/100	20	FACW
Solidago canadensis					25/100	25	FACU
Aster vimineus					10/100	10	FAC
Grasses					30/100	30	FACU
Mosses and Liverworts:							
Tally:	OBL	FACW 1	FAC 1	FAC-	FACU 2	UPL	SUM 4
{OBL+FACW+FAC} SUM		X 100 =	Area Disturbed?			X Yes	No
2/4=50%			Describe: Fill in profile.				

(continued on reverse side)

SOIL

Depth	Munsell Color (Wet) Matrix/Mottle	USDA Texture (Wet)	Remarks
0 inch			
3 inch		Gravel	Refusal at 3"
____ inch			
____ inch			

Soil Pedigree: Not listed — Permeability: Not listed

Series and Phase: Urban Land — Drainage Class: Not listed

____ NTCHS List	____ Organic Soil	____ High Organic Content in Surface Horizon
____ Histic Epipedon	____ Sulfidic Material	____ Aquic Moisture Regime
____ Peraquic Moisture Regime	____ Reducing Condition	____ Iron Concretions
____ Manganese Concretions	____ Gleyed	____ Wet Spodosols
____ Dark Vertical Streaking of Subsurface Horizons		____ OBL Plants
____ OBL and FACW Plants and Wetland/Upland Boundary Abrupt		

HYDROLOGY

____ Recorded Data Indicating Inundation or Saturation for Extended Period During the Growing Season

Source: — Dated:

PRIMARY INDICATORS:	SECONDARY INDICATORS: (2 or more required)
____ Inundation (Depth___)	
____ Saturation in Upper 12 Inches (Depth___)	____ Oxidized Root Channels in Upper 12 Inches
____ Watermarks	____ Water-stained Leaves
____ Driftlines	____ Local Soil Survey
____ Sediment Deposits	____ FAC Neutral Test
____ Drainage Patterns	____ Other (Buttressed Trees, Stooling)

CONCLUSIONS

No	Hydrophytes Prevalent	No	Hydric Soils
No	Wetland Hydrology	No	Wetland?

Wetlands Scientist(s):

Wetlands Scientist(s):

Wetlands Technical Specialist: Carl E. Ramey, CWS

APPENDIX B

TRANSECT PHOTOGRAPHS

WETLAND AT FLAG A3

UPLAND AT FLAG A3

WETLAND AT FLAG B7

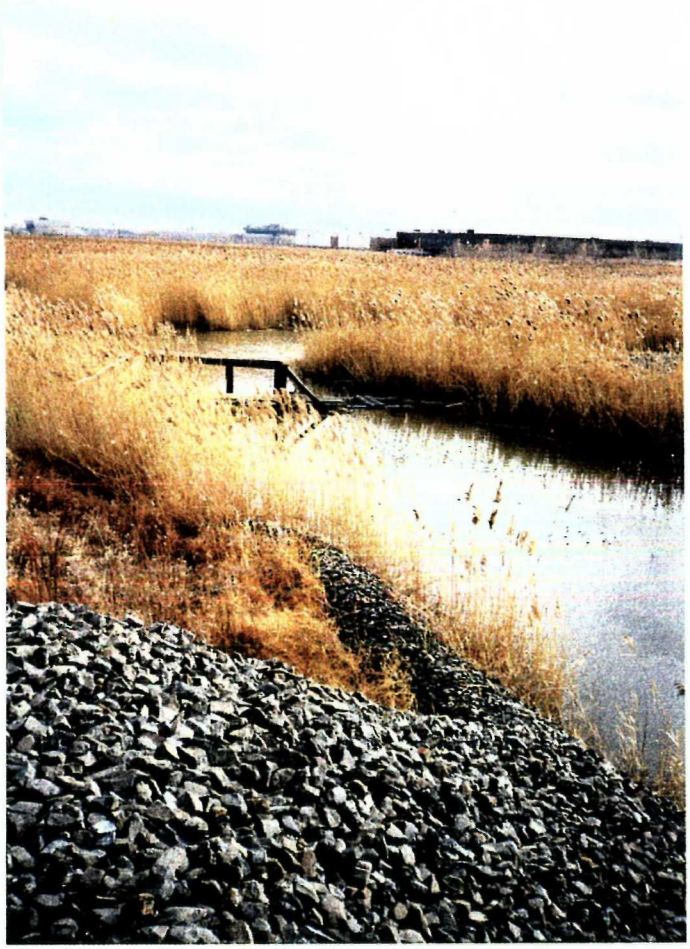
UPLAND AT FLAG B7

WETLAND AT FLAG B33

UPLAND AT FLAG B33

VIEW OF ACKERMAN'S CREEK
LOOKING SOUTHWEST

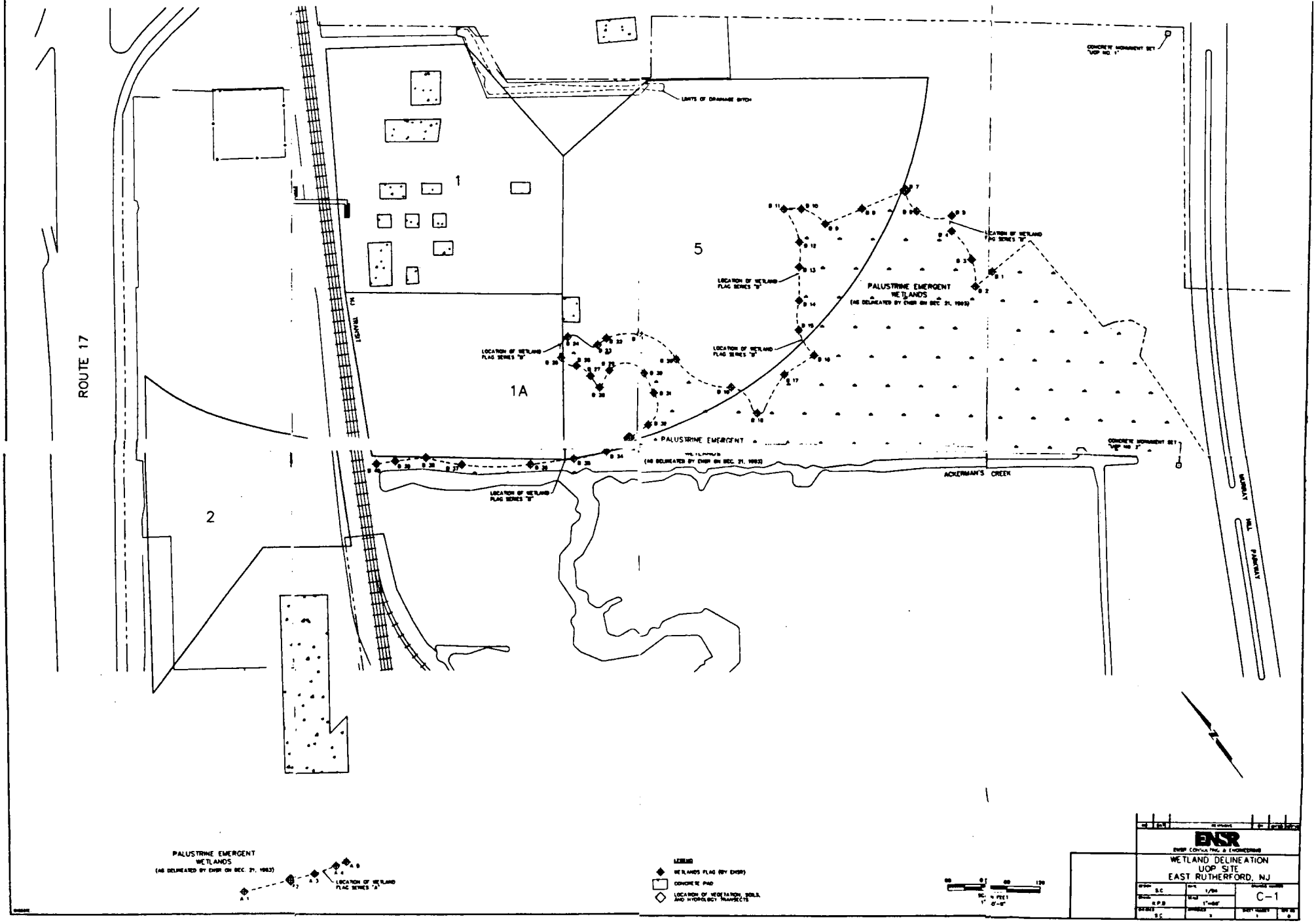
VIEW OF REMEDIATION AREA AT
ACKERMAN'S CREEK LOOKING EAST



VIEW OF ACKERMAN'S CREEK
LOOKING SOUTHEAST

APPENDIX C

SITE PLAN


ROUTE 17
1
1A
2
5
PALUSTRINE EMERGENT
WETLANDS
(AS DELINEATED BY ENSR ON DEC. 21, 1993)
ACKERMAN'S CREEK
LIMITS OF DRAINAGE DITCH
CONCRETE MONUMENT SET "UOP NO. 1"
CONCRETE MONUMENT SET "UOP NO. 2"
LOCATION OF WETLAND FLAG SERIES "B"
LOCATION OF WETLAND FLAG SERIES "A"
LEGEND
WETLANDS FLAG (BY ENSR)
CONCRETE PAD
LOCATION OF VEGETATION, SOILS AND HYDROLOGY TRANSECTS
ENSR
WETLAND DELINEATION
UOP SITE
EAST RUTHERFORD, NJ
C-1